REMARKS

The present application has claims 1-14 pending. Claims 7-12 and 14 have been withdrawn from consideration, but not yet canceled. Applicants have herein amended claim 5 to correct a typographical error.

Pursuant to the restriction requirement, claims 1-6 and 13 are pending, and claims 7-12 and 14 have been withdrawn from consideration. After examining the restriction in more detail, however, Applicants believe the separation of claims l and 9 (and their associated dependent claims) is incorrect. Independent claim 1 is directed to a catalyst-coated membrane (CCM) whereas claim 9 is directed to a membrane-electrode assembly (MEA) containing the CCM and at least one gas diffusion layer (GDL). Accordingly, claims 1 and 9 are related as "intermediate" and "final product": see, for instance page 6, last sentence, of the specification:

The catalyst-coated membranes may, for example, be used as components for membrane-electrode-assemblies (MEAs) in low temperature fuel cell stacks

For an intermediate product and a final product to be distinct inventions, the intermediate and final products must be mutually exclusive inventions (i.e., not overlapping in scope) and not obvious variants, and the intermediate product as claimed is useful to make other products than the final product as claimed. Typically, the intermediate loses its identity in the final product. See MEPE §806.05(j). These

conditions are not met by the CCM of claim 1 and the MEA of claim 9. Claims 1 and 9 overlap since the elements of claim 1 are also present in claim 9. Additionally, claims 1 and 9 would be obvious variants of one another -- only differing by the present of the GDL in claim 9. Moreover, the CCM of claim 1 retains its identity in the MEA product of claim 9.

Even if the restriction is considered a restriction between combination and subcombination inventions, there must be two-way distinctness and a serious search burden if restriction was not made. See MPEP §808.02. Additionally, under this standard the combination should not require the particulars of the subcombination for patentability (e.g., to show novelty and unobviousness). When these factors cannot be shown, such inventions are not distinct. See MPEP §808.02.

Here, the combination requires the details of the subcombination for patentability. There is no evidence that the combination (MEA) is patentable without the details of the subcombination (CCM). In such instances, the inventions are not distinct and a requirement for restriction should not be made or maintained, even if the subcombination has separate utility, see MPEP §808.02.

In light of the above remarks, Applicants respectfully request that the restriction requirement be reconsidered and that independent claim 9 (and its dependent claims 10 and 14) be examined in the present application in conjunction with claims 1-6 and 13.

In the November 26th Office Action, the Examiner rejected claims 1-3, 5-6 and 13 under 35 USC §102(b) as allegedly anticipated by Steck (EP 0586461 B1). Claim 4 was also rejected over Steck in combination with secondary reference Spencer (WO 00/10216).

Applicants disagree with the Examiner's position. Steck does not disclose the presently claimed invention, but rather discloses a different type of MEA technology based on the use of gas diffusion electrodes (or catalyst-coated GDLs) in combination with non-coated ionomer membranes.

In contrast, the present application is directed towards catalyst-coated membranes (CCMs), in which the membrane is coated with catalyst layers on both sides. This CCM is optionally combined with GDLs to form a five-layer MEA. Steck does not disclose catalyst-coated membranes. It is clear from the language in Steck that the reference is not directed to the CCMs of the present invention -- see, for instance:

page 3, line 28-30 (also claim 1 (a), (b), (c)):

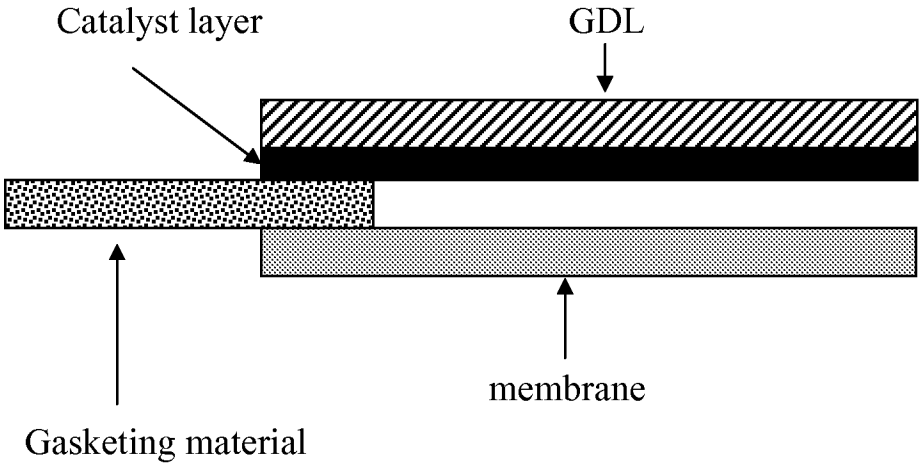
"...Gasketed MEA comprising an anode and a cathode, each planar in configuration and having an electrochemical active portion. An ion exchange membrane is interposed between the anode and the cathode." (emphasis added); or

page 4, line 46:

"..... Carbon fiber based electrodes 18, 20 to form the top and bottom portions.... In FIG 1, electrode 18 is the anode and electrode 20 is the cathode.."

Because of this difference between the present invention and Steck, the protective film (equivalent to the "gasketing material" of Steck) is applied in substantially different ways. In Steck, the gasketing material is "interposed" between the anode/cathode electrodes and the membrane (see claim 1 and Figures 1 and 2 in Steck) -- thus, resulting in the following layer sequence in the overlapping area:

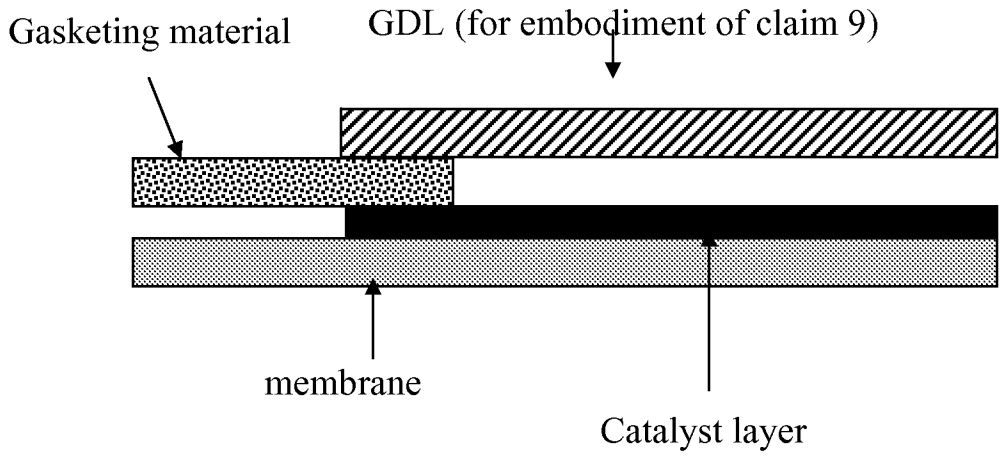
GDL/catalyst layer – gasketing material – membrane (see drawing 1 below):



In contrast, the present invention, as set forth in claim 1, requires that the protective film be applied in such a way so that the layer sequence in the overlapping area is:

gasketing material (i.e. protective film) – catalyst layer – membrane

(see drawing 2 below)



Because the layer sequence of the presently claimed invention is different than that of Steck, the CCM structures of the present invention are different than the structures disclosed in Steck. Thus, claim 1 is novel over, and not anticipated by, the disclosure of Steck. The claims that dependent from claim 1 (claims 2-6 and 13) are patentable over Steck for the same reasons as outlined for claim 1.

The MEAs of the present invention, as set forth in claim 9, are made from the CCMs discussed above. In this case, the protective film is applied in such a way so that the layer sequence in the overlapping area is:

GDL – gasketing material (i.e. protective film) – catalyst layer – membrane (see drawing 2 above, including the GDL).

Accordingly, claim 9 and its dependent claims are patentable over Steck for the same reasons outlined above for claim 1.

Due to the different construction discussed above, the CCMs (claims 1-6) and MEAs (claims 9-10) disclosed in the present application possess superior characteristics compared to the state of the art materials, such as those disclosed in Steck. Conventional MEAs comprising gasketing layers are predominantly made according to the gas distribution concept and suffer from various disadvantages (see page 6, lines 11-15). Surprisingly, it was found that a more stable MEA was obtained if the present invention was observed -- i.e., starting from the CCM (catalyst-coated membrane), applying the protective film as described, and then applying the GDL. The present invention results in an MEA having sufficient overlap of the protective film and the passive and active areas of the membrane. As described in the specification, page 5, lines 3-6:

"However, depending on fuel cell operating parameters, frequently failures in the membrane material may occur at the interface between the active area and the sealing

layers. Therefore, sufficient overlap is needed between the sealing/gasket layer, the active electrode layer and the ionomer membrane."

The embodiments of the prior art, however, fail to teach that the protective film (or gasket or subgasket) should overlap the passive area and the active area of the ionomer membrane. This kind of combined overlap is advantageous for the following reasons:

- The claimed CCM withstands frequent assembly and disassembly processes without damages (see Example 1, final sentence), and
- The MEA made thereof showed no damage after 300 hours of operation (see Example 2).

Neither Steck nor the secondary reference Spencer disclose the features of the present invention. Thus, the claimed CCMs and MEAs and the corresponding manufacturing processes and uses are believed to be patentable.

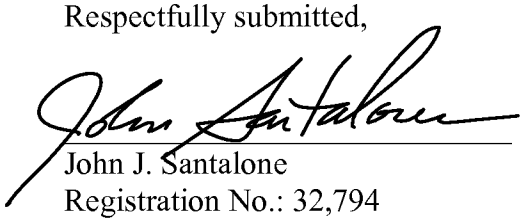
In light of the amendments and remarks above, Applicants request reconsideration and withdrawal of the rejections under 35 U.S.C. §§102(b) and 103(a) set forth in the November 26, 2007 Office Action and respectfully solicit allowance of the present application.

Applicants would also like to inform the Examiner that the corresponding European application to the present U.S. application has been granted -- EP 1,403,949 B1 (copy enclosed).

No fee is deemed necessary in connection with the filing of this amendment, other than the fee for the requested three-month extension of time. If any additional fees are due, or an overpayment has been made, please charge, or credit, our Deposit Account No. 11-0171 for such sum.

If the Examiner has any questions regarding the present application, the Examiner is cordially invited to contact Applicants' attorney at the telephone number provided below.

Respectfully submitted,



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